Translation and Psychometric Evaluation of the Vietnamese Clinical Learning Environment Inventory With Nursing Students

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Introduction / background

Reliable tools that collect the perceptions of nursing students are essential to evaluate new nursing curricula and to inform improvements to learning and teaching strategies. This study was conducted in Vietnam where nursing is undergoing substantial change as the government moves nursing towards a baccalaureate degree educated, independent and self-governing profession (Chapman et al., 2012; Harvey et al., 2013). Change has been facilitated within a national government strategy to improve the health workforce and the health of the Vietnamese population (Nguyen & Chang, 2014). Within these developments, competency-based curriculum for Bachelor of Nursing courses has been implemented in several Vietnamese universities with mentoring by Australian nursing academic staff. As there are no Vietnamese language instruments which evaluate the quality of the Vietnamese clinical education environment, translation, adaptation and testing of an existing English language tool was undertaken.

The modified Clinical Learning Environment Inventory (CLEI) (Newton et al., 2010) is an English language instrument for evaluating nursing students’ perspectives of clinical education environments. It contains of 42 items in six subscales and is rated using a Likert scale. The CLEI was modified and tested by Newton et al. (2010) from a prior version developed by Chan (2002).

This study aimed to determine the psychometric properties of the Vietnamese language version of the Clinical Learning Environment Inventory (V-CLEI) in a sample of undergraduate Bachelor of Nursing students. The content validity of the revised V-CLEI was also examined with an expert panel of 21 Vietnamese nurse teachers and recent nurse graduates.

**Literature**

The clinical health care environment is where nursing students typically integrate prior theoretical knowledge and skills learned at university with experiences of real people and health care situations to develop competence (Flott & Linden, 2016). Nursing students are usually adults and as such self-regulate much of their learning within these experiences. Thus their perceptions of how the clinical environment supported or was a barrier to their learning is relevant and has been linked with attainment of learning outcomes (Bisholt et al., 2014; Kristofferzon, et al., 2013; Newton et al., 2010).

There are no existing validated Vietnamese language instruments identified with which the Vietnamese nursing clinical education environment could be evaluated therefore the V-CLEI (Truong, 2015; Newton et al., 2010) was selected. This Vietnamese language version had previously been translated and content validity testing undertaken with an expert panel however the psychometric properties of the inventory had not been tested. In instrument translation, the cultural subtleties of language and fine nuances of meaning cannot be assumed to be stable and use of rigorous translation methods is an essential step in validation of a new language version of an instrument (Sousa & Rojjanasrirat, 2011).
Methods

A convenience sample of 1023 undergraduate nursing students from five universities and colleges across Vietnam completed demographic questions and the V-CLEI following a clinical practice placement. To perform factor analysis, the sample was randomly split into two subsamples named A (n = 511) and B (n = 512) respectively. The groups which were equivalent in term of age, gender, year of study and V-CLEI score. Exploratory factor analysis (principle axis factoring, varimax rotation, and eigenvalues ≥1, item loading was supressed by 0.4) was performed in group A, then the EFA results were cross-validated in group B using Cronbach alpha and confirmatory factor analysis (CFA). The clarity and relevance of the modified instrument was judged by a group of experienced nurse teachers (n = 21) using a 4-point Likert scale (1 = strongly disagree 4 = strongly agree). Content Validity Indices (CVI) were calculated for the modified scale.

Results

The average age of the sample (n=1023) was 21 years and were predominately female (75%). Students were spread across second (52 %), third (37%) and fourth (12%) year of their courses. The proportion of respondents in each year was varied as three locations offered a three-year degree and two a four-year degree. The EFA produced a five-factor solution that explained 41.03% of the variance consisting of 25 items. When testing the EFA results in subsample B, the modification indices suggested a good model fit (CMIN/DF = 2.35, CFI = 0.90, RMSEA = 0.05 [90% CI 0.046, 0.057], PCLOSE=0.33). The five new subscales were labelled and Cronbach alpha coefficients computed as: i) Student’s Learning (α=0.69), ii) Satisfaction with Clinical Experience (α=0.74), iii) Student and Teacher Interaction (α=0.76), iv) Student Centeredness and Learning (α=0.74), and v) Support for Learning (α=0.63). Finally, an expert panel (n=21) reviewed the 25 items for content-validly revealing on overall acceptable scale level instrument (average CVI = 0.98).

Discussion

This study robustly translated the CLEI although congruency with another culture cannot be assumed. Psychometric testing with a large multi-site sample enabled us to establish which items ought to be retained in the V-CLEI. As the five-factor model only explains 41.03% of the variance, it is likely that there are latent constructs in the Vietnamese clinical environment that are not represented. The health care context in Vietnam is very different to that in western contexts where the CLEI was developed and previously tested, and is characterised by overcrowding, high nursing care workload (25 patients per nurse is the norm) and high clinical teacher workload (40-50 students per nurse teacher). Concepts in the original CLEI and V-CLEI items representing forces that enable individual learning and value innovation and variety in teaching behaviours may not be applicable to Vietnamese nursing students’ perceptions of their experiences or to the Vietnamese clinical environment. Further testing and refinement is recommended to enable informed improvements in undergraduate nurse education provision and help equip future Vietnamese nurse graduates to function at levels comparable with other Asian countries such as Thailand or the Philippines.


**Abstract Summary:**
This study aimed to translate and assess the psychometric properties of the Vietnamese language version of the Clinical Learning Environment Inventory in a sample of undergraduate Bachelor of Nursing students (n=1023) in Vietnam. Factor analysis demonstrated a new model fit with 5-factor solution explaining 41.03% of the total variance.

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Professional Experience: Senior Lecturer - Course Coordinator - Undergraduate Programs Dr Ramsbotham has coordinated the undergraduate Bachelor of Nursing program, led the postgraduate paediatric /child health subject area within the Masters of Nursing program at QUT and is currently the first year subject area coordinator for the Bachelor of Nursing. She has expertise and a range of experience in employing and evaluating the impact of learning and teaching approaches in these areas. Dr Ramsbotham has demonstrated significant contributions to academic leadership in curriculum development and implementation as well as effective course and subject administration.

Author Summary: She is a senior lecturer, expert in adult education and training Dr Ramsbotham has coordinated the undergraduate Bachelor of Nursing program, led the postgraduate paediatric /child health subject area within the Masters of Nursing program at QUT and is currently the first year subject area coordinator for the Bachelor of Nursing. She has expertise and a range of experience in employing and evaluating the impact of learning and teaching approaches in these areas.

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**Author Summary:** Ha is a nurse passionate about improving nursing care in her home country of Vietnam and is particularly interested in undergraduate education within her role as teacher at Hanoi medical university.

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**Author Summary:** Hue is interested in research in nursing education particularly in understanding the factors that effect students' development of competence. Hue leads the nursing department of the Khanh Hoa Medical college and coordinated curriculum.